

CLAIMS

1. A light emitting diode comprising a light emitting diode element mounted on a base, said light emitting diode element
5 being protected at its surface side by a resin seal member, the light emitting diode being characterized in that a fluorescent material containing layer is arranged on a back side of said light emitting diode element.

Sub 10 2. The light emitting diode according to claim 1, characterized in that said light emitting diode element is a light emitting diode for blue luminescence, made of gallium nitride type compound semiconductor or SiC type compound semiconductor.

15 3. A light emitting diode comprising two or more light emitting diode elements mounted on a base, said light emitting diode elements being protected at their surface side by a resin seal member, the light emitting diode being characterized in that: at least one of said two or more light emitting diode elements is a light emitting diode element for blue luminescence,
20 made of gallium nitride type compound semiconductor or SiC type compound semiconductor; and a fluorescent material containing layer is arranged on a back side of said light emitting diode element for blue luminescence.

a Sub 25 4. The light emitting diode according to claim 1 or 3, characterized in that: said fluorescent material containing

layer is composed of a fluorescent material dispersed into an adhesive; and a back of said light emitting diode element is firmly fixed to said base by the adhesive action of said fluorescent material containing layer.

a 5 5. The light emitting diode according to claim 1 ~~or 3~~, characterized in that: said fluorescent material containing layer is formed with a fluorescent material and an adhesive separate from each other; and a fluorescent material containing resin layer and an adhesive layer are formed in layers on a top surface of said base.

a 6. The light emitting diode according to claim 4 ~~or 5~~, characterized in that said fluorescent material containing layer is formed on the top surface of said base by printing means.

a 7. The light emitting diode according to claim 1 ~~or 3~~, characterized in that said fluorescent material containing layer is a fluorescent material containing resin sheet pasted on a top surface of said base.

a 8. The light emitting diode according to ^{claim 4} ~~any of claims 4, 5, and 7~~, characterized in that said fluorescent material is an yttrium compound.

a 9. The light emitting diode according to claim 1 ~~or 3~~, characterized in that a periphery of said fluorescent material containing layer is surrounded by a dam provided on a top surface of said base.

a 25 10. The light emitting diode according to claim 1 ~~or 3~~,

characterized in that a reflecting surface is arranged on a bottom side of said fluorescent material containing layer or a top surface of said base.

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11. The light emitting diode according to claim 1 ~~or 3~~,
5 characterized in that an upward reflecting surface tilting outward is arranged around said light emitting diode elements.

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12. The light emitting diode according to claim 1 ~~or 3~~,
characterized in that a lens portion of convex shape is formed on a top side of said resin seal member.

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10 13. The light emitting diode according to claim 1 ~~or 3~~,
characterized in that: said resin seal member is formed flat at a top side; and a fluorescent material containing layer is formed on the top side.

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15 14. The light emitting diode according to claim 1 ~~or 3~~,
characterized in that said base is a glass epoxy substrate, a solid-molded substrate of liquid crystal polymer, or a sheet metal substrate.

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20 15. The light emitting diode according to claim 1 ~~or 3~~,
characterized in that: said light emitting diode element is connected to a pair of electrodes arranged on said base; and said electrodes are surface-mounted directly to printed wires on a motherboard.

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